payments strategy forum

Data and Standards Editorial Group

Editorial Group Solution Description:

A Simplified Core Payments Platform (SPP) – Concept Assessment

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Working Group Objective:
'informing the forum of relevant market, technological and regulatory developments'

payments strategy forum

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Document Purpose:

This document has been created with the intention of providing the reader with an understanding of the proposed solution for the Simplified Core Payments Platform (SPP), the journey in arriving at the proposal, and an outline of the strategic objectives and the problems it is intended to solve.

The document has been completed by members of the Horizon Scanning Working Group (HSWG) and Simplifying Access to Markets Working Group (SAM WG), who have collaborated together to form the Data and Standards Editorial Sub Group (DSEG). It has been reviewed by members of the Editorial Sub Group as well as distributed to the members of both working groups for comment, prior to submission to the over-arching Payments Strategy Forum for ratification and agreement to proceed.

Background:

In the UK today, numerous systems make our payments possible, from cheques to direct debits to card and mobile payments. Innovations are often made to these systems where these can make a positive difference to users. There's a strong belief that simplifying these systems could drive competition and innovation to deliver end user needs better, and support regulatory change more easily.

The UK retail payments landscape has many payment systems (managed by Payments Systems Operators – PSOs), including Bacs, Faster Payments, LINK, Cheque & Credit Clearing, and CHAPS. All these schemes provide payment services in a reliable and secure way and are trusted by the industry and their consumers. However, in order for Payment Service Providers (PSPs) to be competitive, they need to sign up to all of the schemes individually – either directly or indirectly.

It has been noted that the payment systems are not interoperable, and access to them is complicated and expensive. The difficulties in access act as a brake on innovation and competition between PSPs. The design of current systems limit scalability and make change slow and cumbersome. In addition, end-users may not get everything they want by way of functionality and information.

Features, or the lack of them in the UK payments systems lead to some significant detriments for PSPs and end-users. For example, it is not easy to track payments across the payment journey, unbanked/underbanked consumers' needs for simple and cost effective payment mechanisms are not met leading to a preference for cash usage, data on the payer and payee is not fully utilised meaning greater challenges to meeting KYC and AML rules. In addition the difficulty and cost of entry to schemes may lead to greater costs on the part of PSPs, which are ultimately passed onto the wider economy both in the form of higher pricing and also in the form of lack of competition and its resulting innovation.

The cost and difficulty of entry form barriers to competition both between PSPs and in banking more widely, in that new PSPs and challenger banks face barriers to obtaining direct access to essential payment systems such as Bacs and Faster Payments. The PSOs are beginning to make access to their schemes easier through the development of aggregator connectivity, re-designed onboarding procedures and the recently introduced"pre-funding settlement" process. The PSF's SAM WG is encouraging further work in this area, in particular for the schemes to work with the Bank of England to extend access to settlement accounts.

On a wider front, while some improvements are being made, the existing schemes are not yet meeting the requirements derived from changing user needs and resulting from new regulation such as PSD2 and their impact on messaging formats and data carrying capability.

The DSEG has therefore sought to develop workable solutions to improve both access to and the performance of the UK's payment systems including a focus on the growing demand for real-time payments, and looking ahead to simpler architecture which reduces reliance solely on a core infrastructure,with maintained security and reliability. This solutions document provides an overview of potential development options for consideration, and the proposed next steps to be followed to determine which route is best to take forward for the UK payment systems.

Key Timelines:

The DSEG, proposes that, if the SPP solution is agreed as part of the PSF strategy, it is taken forward over a two-year time span from completion of the PSF overall strategy. The expected timeline would include the assessment of the solution proposals, develop an outline solution design, requirements gathering, development, testing and implementation planning. The proposed timeline would be subject to refinement of requirements definition and a thorough sizing appraisal as part of the future industry discussion and agreement process, and details of the solution will evolve as solution definition progresses.

It is expected that the delivery of the SPP solution would be developed by industry, and overseen by a yet-to-be appointed governance vehicle.

Common messaging standards, an enabling development for the new system, will be defined and ratified by an appropriate governance body and provided to PSPs and other relevant industry participants within 12 months, with a deadline for implementation being aligned with the development of a the new SPP**.** This activity could begin at an early stage and build on work already underway on UK payment message standard mapping.

Scope:

It is expected that the areas that would be in-scope for the SPP solution would be:

- All UK domestic retail payment mechanisms, e.g. C&CC; Bacs, Faster Payments, CHAPS
- Standards covering payment messaging and connectivity, e.g. APIs, payments data, protocols
- Infrastructure and Operations of the mechanisms

The areas that have currently been defined as out-of-scope are as follows:

- Card schemes, as their payment mechanisms are different and operate cross-border. In addition, the processing mechanisms for Cards are already subject to regulation from the EU and national authorities under Interchange Fee Regulation
- End-user needs. Solutions to detriments relating to specific end-user needs are considered in other papers to the PSF. However, indicatively the SPP solution has been used to demonstrate how some of these end-user needs could be implemented
- Any potential future consolidation of payment schemes or PSOs, or their governance is considered in other papers to the PSF

The role of LINK is currently unclear and requires further analysis, as to whether it would benefit from inclusion in the SPP, or would be more closely aligned to the standards and processing framework already set up and in place, based on the existing international cards schemes.

Strategic Objectives:

The UK payments infrastructure is a critical and strategic part of our country's infrastructure, and helps maintain a healthy, vibrant and functioning economy. In order to improve the payments infrastructure, a key challenge is to enhance access to payment systems for all PSPs whilst implementing new global messaging standards such as ISO20022 and supporting PSD2. The strategic objectives set by the PSF are to ensure that all detriments in the current payments infrastructure can be identified with a clear plan to address them, in addition to delivering agility to react to mandatory regulatory and industry changes. In addition, setting out to provide simple access to payments in a co-ordinated, reliable and secure way, allowing end-users the ability to interact with all payment schemes in a cost efficient manner.

Problem Statement:

The problems derived from the current payment systems affect two big sets of service users:

- End users of payment services, retail and commercial, and third party providers (TPPs)
- Payment services providers (PSPs) – consisting of credit institutions, electronic money institutions (EMIs) and other payment institutions (PIs)

Within the second category, organisations seeking to access the UK payments market can be presented with multiple costly and lengthy on-boarding processes leading to restrictive operating models. The difficulties of entering payments schemes directly affect the ability of these organisations to create innovative and cost efficient banking and payments services for their customers.

End users needs are increasingly distant from the current capability of the existing payment systems. The introduction of innovative ways of making payments is challenging the existing multiple schemes with conflicting needs and objectives. For example, it can be observed that Paym, Pingit, and Zapp have been slow to be fully used across the marketplace, due in some part to the need to build on top of, follow existing scheme rules and establish limited

interoperability, although mostly this can be attributed to overall brand awareness and compatibility with banking provider infrastructures.

Also, the data limitations of the UK's current payment systems present another key challenge in terms of meeting the expectations of upcoming regulation (e.g. PSD2, 4MLD) and delivering value from the service development opportunities presented. Data limitations also restrict the interoperability of existing UK systems. The existing payments schemes have differing capacities and capabilities in their various data standards. The poverty of reference data can limit the dynamic linkage of payment transaction and payee information.

However, the data challenge extends beyond secure carriage of 'critical data'. Current payment systems restrict the creative potential to develop the world class payments that end users want. They simply cannot carry the 'payload' on individual transactions and potentially the collective totals may present systemic risk and reference associated richer data.

In order to address these issues, the SPP proposal, discussed in detail in this document, has emerged after bringing together learnings about the global move towards digitalisation and real-time, 24/7 payments. In the context of real-time systems, the mitigation of systemic risk is of vital importance for national and international payment systems and the UK will want to preserve, or indeed enhance, its strong track record of resilience and control. Dependent on the implementation approach adopted, the SPP model will reduce the vulnerabilities resulting from some single points of failure (SPoFs) inherent in the current infrastructure, avoiding technical concentration risk and greatly expanding interoperability and, therefore, contingency.

The SPP approach offers modern messaging protocols which support interoperability and would follow principles that allow the safe transmission of 'rich' or 'enhanced' data and support a framework of payment support services such as Confirmation of Payee, Request to Pay and Payment Assurance and other added value propositions of interest to consumers and organisations including HM Government, charities and corporates. The SPP will ensure settlement controls and reporting are maintained or enhanced by coordinating with and complementing the Bank of England RTGS review.

Vision Statement:

To deliver an effective payments market, that is simple to navigate, provides a "level playing field" for access, quality and fees which is accessible by all Payment Service Providers (PSPs) and increases competition for the benefit of all service users.

Solution Development:

In this section, we cover both solution principles and common messaging standards that any new or developed solution will be based around.

Solution Design Principles

In exploring the possible solutions for a Simplified Payments Platform, we have identified the key principles that the new central payment solution will be designed around. They are:

- Simple, open access for PSPs to the UK payments system
- Meets the needs of its service users and end-consumer
- Delivers its service securely and minimises risk on all parties
- Any new solution must be economically viable to design, implement and maintain
- Migration to the new solution must cater for different services and standards, and provide for mass migration, phased migration and regression in a secure, robust way
- Provides enhanced data capabilities associated with the payment transaction, to enable new end-user services allowing enhancements and new innovations to be delivered in an agile way
- Provides, supports and sustains competition in the network, its infrastructure and in the user access to its infrastructure
- Layered in design separating the core push payment service from overlay services.
- The solution is set out in a manner that is agnostic to Payment Scheme Operators. Recognising the importance of the existence of PSOs to provide a level playing field for the operation of payments between participants, the new SPP will allow PSOs to develop and manage their overlay service propositions that leverage the SPP
- It will enable any PSP to reach any other PSP simply, and at low cost
- The solution is delivered in full alignment with international standards and is flexible to the changing demands of international standard and regulations
- The solution supports scalability in transaction volumes and the number of direct participants, whilst being versatile and responsive to user needs – without compromise to security and resilience, operating with a 'no single point of failure' mission
- Direct and indirect access models should be supported
- Providers of Overlay Services will remain, and be treated as, separate and independent allowing for their own governance and funding arrangements to remain partitioned from the core infrastructure

Common Payments Messaging Standards

The SAMWG has identified as part of their work that there is the strategic direction, from a messaging standard perspective, for the UK to adopt ISO 20022. This will facilitate simplified access to the UK payments market, as fewer interfaces and standards will need to be supported. It identified that the end state vision for UK electronic payments is that they operate based on common ISO 20022 message standards.

It is recommended, therefore, that any development of a Simplified Payments Platform adopts ISO 20022 as the messaging standard, refined for usage in the context of UK electronic payments by UK specific Implementation Guides (IGs). ISO 20022 implementation for UK electronic payments should use IGs to codify rules and business processes in the form of business rules and technical/data restrictions specific to the UK community. The adoption of a set of common standards needs to be supported by a strong case for national adoption.

The desire is for the whole UK payments eco-system to adopt ISO 20022 end-to-end. Moving to native ISO 20022 for the SPP is strongly encouraged as it will unlock extensive functionality; including support for enhanced data requirements and will be in step with other large markets

who are migrating or actively considering migrating to ISO 20022 as part of payments platform upgrades.

ISO 20022 is proposed as the common standard solution as investment in implementing it has already taken place globally. UK PSPs have already invested in ISO 20022 for SEPA, Current Account Switching, Cash ISA Transfer and Cheque Image Clearing Service. Thus the PSP-to-PSP domain is seen as the priority for adoption and migration.

Some PSP's may also have invested in ISO 20022 capabilities for their corporate clients. Corporate-to-PSP migration requires different considerations, and the UK needs to be mindful of the adverse impacts on business users in the SEPA case of a mandated adoption. It is likely that business users will require mapping services for a period until market solutions emerge to support wider end-to end adoption. Larger Corporate users who may have invested for the SEPA are expected to wish to align their processing quickly to achieve efficiencies.

Consideration should also be given to the opportunity to reuse elements of ISO 20022 for overlay services to ensure data harmonisation as much as possible.

Benefits of ISO 20022 include the following:

- Aligned with global market trend towards ISO 20022, enhancing the opportunity for a greater degree of global interoperability
- Competitiveness and ability of UK electronic payments businesses
- Improved payments integrity
- Reduced operational and compliance risk
- Efficiency and cost reduction of payment processing operations
- Standardised implementation reduces cost, time to change and improve overall performance
- Helps ensure re-use and longevity of the messages once developed
- Reduced costs in development
- Phased migration feasible to mitigates the impacts and risk of a big-bang adoption
- A large vendor community have already created tools to produce ISO 20022 compliant messages

Simplified Core Payments Platform (SPP) Solution:

The concept of a Simplified Payments Platform (SPP) is the result of work done by the PSF Horizon Scanning Working Group. It was developed on the basis of qualitative analysis undertaken by a range of participants from the Payments Strategy Forum and put forward for further development at the PSF meeting in April 2016.

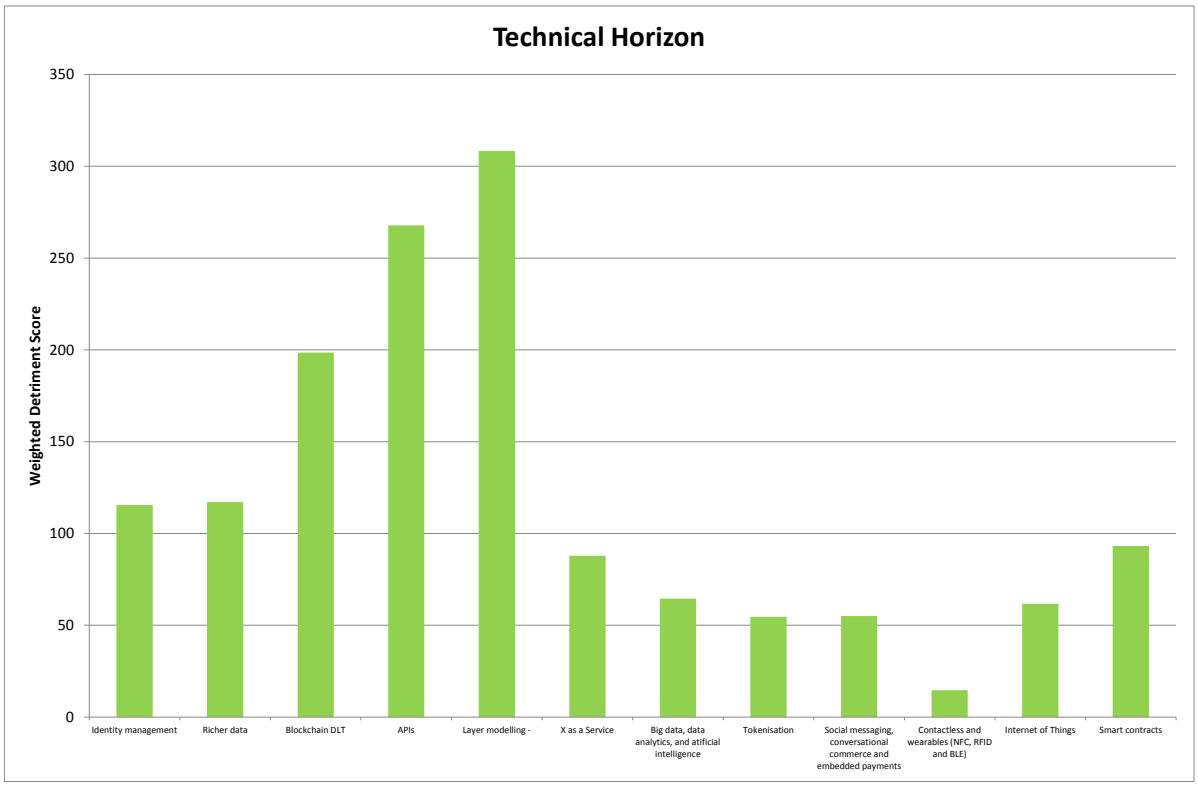


Figure 1: Technology initiatives weighted to the detriments they solve – Horizon Scanning Working Group Report

The output of the qualitative analysis showed that most of the detriments, relating to access to payments systems and end-user needs listed by the Payments Community could be solved by adopting a holistic approach to applying new technologies, as shown in the graph above. The Simplified Payments Platform concept emerged after bringing together learning about the global push towards digitalisation and real-time, 24/7 payments, work done in Australia on their New Payments Platform and elsewhere, advances in distributed ledger technology (e.g. blockchain) and the developing legislative environment underpinning APIs. It leverages the technological models used in the telecoms industry (distributed intelligence, layered and based on common standards) which have resulted in unprecedented levels of innovation and competition

The Simplified Payments Platform concept is seeking to address multiple detriments. Among other things it should:

- Open up payments and improve direct access, thus creating a level playing field for PSPs
- Increase competition at all levels of the payments ecosystem
- Allow frequent and agile innovation of Overlay Services to suit user and End-User needs
- Allow scalability
- Ensure and improve security and resilience in the system
- Align with international standards and allow international interoperability.

The SPP concept is underpinned by the following key characteristics: a *single push rail*, *the aspects of governance necessary*, *common messaging standards*, *a layered model architecture* and *Overlay Services*; all of which the following pages discuss in detail.

The proposed Simplified Payments Platform (SPP) is a new payment system based on a single type of payment, one instructed by the payer towards the payee, known as a "push" payment. The creation of a single system performing a single type of payment corresponds to the fact that any type of payment that could be conceived, involves, at some point, the transfer of value from a payer to a payee. The exchanges and context prior to the exchange of value (even if they are relevant for the purpose of establishing liability and responsibilities, such as in the case of Direct Debits) do not have to be viewed, technically, as part of the payment itself. In this sense, the design of a new system which is meant to accommodate the variety of payment types and user needs known today but also and more importantly the variety of payment types that will arise in the future but are yet to be known, require the design of a new payment system independent of the context that may proceed or follow to the transfer of value itself.

The design of the SPP provides a separation of tasks insulates the payment system from the 'overlay services' (that provide the context) that will or could be developed on top, competitively or collaboratively, also removing the systemic impact of their introduction and future updates; it will also make the adoption of the overlay services a matter of choice to the PSPs. The common push rail will enable any PSP, which is connected to the system, to be reachable by the others. It is possible to claim that these desirable consequences of design are not provided by current scheme-based systems.

It is worth noting that while the underlying platform will be based on a "push" mechanism, it is feasible to translate the existing UK payments scheme message types, including BACS Direct Debit, into overlay services on top of the new platform. It is therefore envisaged that existing users of BACS Direct Debit will be able to continue largely unaffected, including the 20,000+ Direct Corporate Access users, using applications provided by their solution providers or PSPs. These applications will require upgrading to work on top of the new SPP.

Available Solution Options:

The Data & Standards Editorial Sub-Group has explored a number of options during recent workshops. In our analysis of the detriments (specifically access related detriments) in our work so far, we have identified three possible options, outlined below:

1. A Distributed Model: a new platform which is decentralised and based on a single type of payment, the "push" payment, allowing overlay services to be built on top of a secure and reliable base platform with multiple possible implementations based on a common specification. A distributed platform may be implemented using distributed ledger technology, or more classic technology.
2. A Centralised Model: a new platform that is capable only of a real-time "push" payment. Such a new core platform could be based on competitive tender and new-

build, or potentially created by building on existing payments infrastructure, for example using core capabilities from those used to deliver an existing scheme..

3. Progressive Migration (Counter-factual Option): This involves a slow, longer-term migration approach and is set out in the Simplifying Access to Markets working groups' Data & Standards papers

Having considered the options, the recommendation of the HSWG would be to prefer option 1 – a fully distributed model, on the basis that a decentralised platform solution not only solves most of the identified detriments, but is also the most resilient and poses a lower systemic risk. In addition, a distributed model complies better with the principles set out – in particular by not having a single point of failure and being potentially more scalable, which is not to be dismissed given the potential number of PSPs requiring to access it. For more detail on benefits of the various options, please refer to pp19ff.

Design Principles

In defining the solution, we have set out three sets of principles – Governance; Operation and System. These are set out below.

Governance Principles

- The simplified system will maintain or increase resilience, security and stability of the payments ecosystem
- The standard for the simplified payments platform will be 'utility' in style, and provide the single specification upon which all other innovation in payments depends
- The standard will be open and can be implemented and hosted by the PSP or a service bureau on its behalf
- The implementations of the SPP (complying with the standard) by PSPs will be competitive and allow for innovation
- Overlay Services will be in the competitive space
- Existing PSO payment instruments will be defined as Overlay Services on the simplified platform, to enable compatibility.
- FPS-SIP instructions will be provided as a model.
- Rules for settlement will have specific standards attributed to them in the Request2Pay API model, in order to facilitate support and backwards compatibility.
- PSPs can define competitive Overlay API services that meets the needs of a specific user group and allow for innovation.
- PSPs must be registered before being allowed to access other PSPs. PSPs implementations will require testing against a reference implementation of a Beneficiary PSP core

Operating Principles

- [DISTRIBUTED] Connectivity between PSPs will be developed on a peer-to-peer basis ensuring there is no 'central infrastructure'
- [DISTRIBUTED] Infrastructure will be procured by individual PSPs to meet their needs; the operational resources will depend on the volume of transactions sent or received by the PSP, and thus costs will reflect the needs of the individual PSPs

- The simplified platform will have the capacity to process retail payments allowing for future versatility and flexibility
- The existing schemes can co-exist with the new solution and PSPs can continue to use the messaging of the existing PSOs for sending and receiving messages
- The existing schemes can co-exist with the new solution by implementing the standard for simplified platform to send to the payer's PSP. This enables new PSPs to receive from the current schemes, while sending and receiving on the new simplified platform
- Rules must be developed to ensure that payment messages are not sent to PSPs on multiple infrastructures to reduce confusion and settlement risk
- Minimal systemic risk will be introduced: the simplified platform can operate in parallel to the current schemes, and receive clearing instructions that are independent. The settlement risks are separated, thus reducing the BoE PSP risk profile.
- PSPs will able to enhance the SLA and behaviour of the user experience via Overlay Services through innovation
- Clearing instructions will be irrevocable and credits can be applied. PSP risk will be managed in the scope of the settlement
- No pending transactions will be allowed; the fate of all transactions will always be known
- The system will be operational 24/7/365
- Transactions will happen in real-time or near real-time (time short enough to be considered as immediate in most applications; e.g. less than 3 seconds)

System Principles

- [DISTRIBUTED] Only an individual PSP will be able to fail, as there is no central infrastructure, or Single Point of Failure (SPoF) in the network.
- There will be a push–credit transfer
- Settlement has not been considered. It is expected that settlement aspects of the solution would be expected to be compliant with rules set by the Bank of England. The Bank of England RTGS review may cover changes in settlement arrangements.
- Minimise exception processes
- The network will be very low latency (KPI to the set)
- Batch transactions will be supported, allowing for direct corporate access
- PSPs will be obliged to accept incoming messages by a date to be defined

People Involvement and Action:

WHO	WHAT
Governance Body	▪ Set up messaging and interface API technical standards and functional specifications
	▪ Coordinate with industry on set-up of initial implementation
	▪ Conduct mapping of existing PSO services into overlay services
	▪ Set out principles of operation
Industry participants	▪ Design, construct solutions to specification for new SPP
Bank of England	▪ Set out principles for allowable settlement within the new SPP

Leadership:

The governance body will lead the effort on standardisation with input from market players and other vendors. An initial implementation will serve to validate the standards and to adapt them as the system is created.

Communication:

The evidence found through community events, plus the well-known limitations of the existing systems, must be clearly communicated to effectively explain what there is a need to change. Once confronted with the reality of the change, the logic to adopting a system able to address most of the detriments but also presenting other advantages, as explained above, becomes a logical conclusion.

Roundtables and a comprehensive report addressing the points about will be part of the communication strategy. It should be rich of examples and case studies to illustrate the need of the new system and also the limitations of the current systems.

The resulting informed decision on the SPP will be submitted to a formal consultation process and should form part of the overall national UK payments plan.

Systems and Processes:

Key areas of impact as follows:

- PSPs will have to amend existing systems interfaces in the processing of payments due to the adoption of ISO20022. From the point of view of the PSP, this will involve the installation of the relevant gateway modules, connectivity to the Close Network of the system and connecting the new payment channel to its banking systems.
- Software vendors will need to create upgraded systems for provision of services to existing customers, including corporate customers with direct access. Some amendments may be expected to some legacy scheme processing, for example, with regard to production and processing of additional messaging and reports, as these are rebuilt as overlay services
- PSOs will need to alter their models for management of schemes and infrastructure to become "overlay services" to the new SPP. A migration plan will need to be developed for PSOs to move their operation to the new SPP from existing infrastructure providers.

Dependencies:

We have identified that there are dependencies – some significant – which will have the potential to either influence or impact the development of the solution that is ultimately chosen; these are:

- Bank of England's review into the Real-Time Gross Settlement (RTGS) standards, processes etc.
- Wider strategy of the PSR

- EU-wide regulatory changes – both in pipeline (where amends may be last minute) or developed in future
- Global payments messaging standards being further enhanced or repealed
- Widerspread adoption of blockchain technologies and the associated impact on centrally – and globally – regulated banking systems
- Agreement of UK PSOs in adopting the chosen solution approach
- Recognition across the payments industry of our identified detriments and agreement on plans and strategies for resolution
- PSPs and PSOs choosing to support the recommended solution through strategic investment in development

Security/Resilience:

The resilience of a new simplified scheme platform should be no lower than today's situation and could improve the resilience of the PSP connected to it since it should be simpler to operate and integrate.

Regarding the SPP, its introduction will be gradual and phased, allowing sufficient time to provide for thorough testing of the technology prior to deployment and full roll-out. However, the resilience of a distributed system may be higher than that of a centralised system, as it cannot be attacked centrally. Given each connected PSP would need to be successfully attacked for the system to fail entirely, the risk of systemic failure will be reduced.

Existing or In-Development Solutions:

From a regulatory perspective, it would be expected that the new SPP Governance Body would be regulated as a PSO by PSR, and may be a designated system by the Bank of England for oversight purposes as a piece of systemically critical infrastructure.

We would expect that further work would be required on the nature of the regulatory oversight, but that this would be based on existing principles and processes to supervise PSOs. However, we would recommend that future work on this solution considers this further in due course with the Bank of England, the PSR and other relevant regulators.

Technologically, in the case of a distributed implementation, it would be expected that reuse by made of various options of implementation from known standard ledger registry systems, albeit distributed to blockchain technology.

International Insights/Benchmarks/Horizon Scanning:

In this section, we consider areas covering insights, international landscapes, connectivity, intermediaries, scheme bypassing, real-time processing and evolving payment instruments. More detail can be found in the Horizon Scanning Working Group Report.

Analysis of payments across the international landscape confirms that global digitalisation is changing the face of payments; Banks are no longer the only players in the payments space, and are competing with other players to maintain their importance and competitive via digital strategies. An international comparison shows that the UK payments market is, in many ways,

world leading, despite its idiosyncratic nature and design. Many innovations found in other countries are simply catching up with the UK. In developing a simplified core payments platform solution, there are a number of key themes/components that have been deployed elsewhere (Internationally and cross-industry) that provide a useful benchmark and can be used to verify the benefits we aim to achieve. Key areas are as follows:

- Increased Connectivity: Digital banking relies on the underlying connectivity and IT infrastructure.This is likely to require closer regulatory alignment between interrelated and corresponding financial and telecoms regulators, along with a drive for providing the highest download speeds, and a well articulated strategic vision with a timebound plan to execute it to enable true real-time payments to be delivered
- Layering and Intermediary Services: Layering is innovating but becoming increasingly complex. A good example of complex non-bank layering is PayPal, where a customer may use Amazon 1-Click ordering with PayPal as the payment method – yet this relies on a debit card to pre-fund the PayPal account. Apple Pay, Venmo, Android Pay can be simple, yet Klarna can be as complex as PayPal as it creates the concept of 'after delivery payment'. Nevertheless they all rely on existing payments mechanisms. In Sweden the underlying instant payments service is BIR, while P2P payments are made via SWISH. From the end-customer's perspective, they just need to know their payment has been made/received
- Scheme Bypassing: There are several examples of methods being used to by-pass the conventional schemes by making payments: i) card to card; using a service like Transfer-wise which uses local automated clearing houses (ACH); or ii) by way of Distributed Ledger Technology (DLT) which is already being used by Ripple as well providing the basis for Bitcoin. Both Ripple and Transferwise aim to provide lower cost and faster cross border payments. iii) Carrier billing services; allow payment for something with an extra charge on a mobile phone bill – are not new. BOKU is an example of a carrier billing service. Customers can choose to pay using their mobile phone number and the payment is debited to their mobile phone account. This can be useful for the unbanked since they can make payments without having a bank account (or a credit card). Many central banks are investigating Distributed Ledger Technology like that used by Ripple
- Real Time Processing: The development of real time services in countries like Australia (New Payments Platform – NPP), Singapore (G3) and the US (The Clearing House – TCH) is effectively a core 'push scheme' built on ISO20022 messaging standards. Real-time services are being layered up and used by third parties to create new services, e.g. Paym, the UK mobile phone payment service,which allows customers to make a payment to another person provided both of them are registered (via their PSP) for the service; this uses either Faster Payments or LINK (PSPs choice as to which to use). Australia's NPP is currently under development allowing payments to be cleared and settled in real time providing certainty to both payer and payee. Other solutions can be witnessed through ideas such as ATM withdrawals without a card
- New and Evolving Payments instruments: A number of countries (e.g. USA) are investigating or developing Request2Pay services. Unlike a direct debit that relies on the debtor pre-authorising payments, RTP services require the debtor to authorise each payment with their bank before it is paid within a defined time window. Mobile devices have stimulated renewed interest in convenient bill paying, asking the debtor to authorise the payment from their device.

Collaborative or Competitive:

It is essential that as part of the solution, full consideration is given to where industry collaboration is needed, and the extent and boundaries to any such collaboration. It is important that collaborative efforts do not extend beyond where necessary (e.g. in order to drive more efficient outcomes) otherwise such extension could stifle competition.

In the context of this solution the Solution Development Principles cited earlier include that the SPP solution "*supports and sustains competition in the network, its infrastructure and in the user access to its infrastructure*". There are a number of principle areas to consider as to whether collaboration is required or not, and these are discussed in turn below.

- **Definition/Maintenance of SPP Core Standards**. The open-API standards used by the Core 'push rail' will need to be developed and managed collaboratively using an appropriate Governance Body (see API Governance paper).
- **Delivery of SPP Secure Network Services**. It is anticipated that the SPP will consist of a number of fully interoperable networks, provided by a distributed model on a competitive basis. PSPs and other SPP users would contract directly with their preferred (approved) SPP network service provider.
- **Provision of Accredited Technology Needed by PSPs to Access the SPP**. As in the case of the mobile telephony infrastructure, the intelligence is maintained at the perimeter rather than the centre. As such, there will be a competitive market for the procurement of the technology required by each SPP participant.
- **Bureau/Aggregator Access Services.** Many PSPs may prefer to employ the services of Bureau / Aggregator service provider to gain access to the SPP and other related services such as systems integration and message translation. Again it is fully expected there will be a competitive marketplace for these services.
- **PSP Implementation & Testing.** It is expected that a new body could be created (Collaborative Implementation Entity) that will accredit or approve a number of providers of registration, implementation and testing services, who would provide such services on a competitive basis.
- **Provision of Overlay Services.** The default arrangement is for these propositions and related Access APIs to be developed in the competitive space. There may be cases where there is a clear demonstrable need for some level of coordination and collaboration (e.g. if full or near-full reach is required in order to deliver the required level and/or distribution of benefits).
- **PSP to Customer Space.** The development and provision of PSP-specific services and propositions is clearly in the competitive space.
- **Settlement Services.** It is anticipated that settlement of transactions processed over the SPP may follow a number of alternative settlement models. Further work is needed in this area in due course though it seems likely that some level of collaboration will be needed, plus coordination and collaboration with the Bank of England and other regulators as necessary. The competitive provision of tiered settlement services (e.g. by PSPs to other PSPs) will also need consideration as part of this work.

In summary the SPP conceptual solution is predicated on largely competitive solutions with collaboration, most effective where the commonality and performance levels are required, e.g. the definition and maintenance of new 'core' API standards. Thereafter the various facets of SPP will generally be supported by a competitive environment. Also it is important to remember that the access benefits from the SPP model will enable easier entry by new PSPs and challenger banks, thus promoting competition in banking more generally.

Quick Win vs Substantial Projects:

N/A

Implementation Approach and Timeframe (overall):

The Data & Standards Editorial Sub-Group, in defining the SPP solution, is operating to a two-year horizon from completion of the PSF overall strategy. The expected timeline would include the assessment of solution proposals, outline solution design, requirements gathering, development, testing and implementation. This timeline would be subject to refinement of requirements definition and a thorough sizing appraisal as part of the group's discussion and agreement process, and details of the solution will evolve as solution definition progresses.

It is expected that the delivery of the SPP solution would be developed by industry, and overseen by an appropriate governance vehicle.

Common messaging standards will be defined and ratified by an appropriate governance body and provided to PSPs and other relevant industry participants within 12 months, with a deadline for implementation being aligned with the development of a the new SPP**.**

As covered earlier, we envisage 3 main alternative implementation approaches:

1. A Distributed Model: a new platform which is decentralised and based on a single type of payment, the "push" payment, allowing overlay services to be built on top of a secure and reliable base platform. A distributed platform may be implemented using distributed ledger technology, or more classic technology.
2. A Centralised Model: a new platform that is capable only of a real-time "push" payment type based on ISO 20022 with any additional functionality as overlay services (as above), but rather than total distribution of clearing and payments processing, there is a minimal level of functionality in a 'core', which would include clearing, addressing services, network connection and a central switch. Such a new core platform could be based on competitive tender and new-build, or potentially created by building on existing payments infrastructure, for example using core capabilities from those used to deliver an existing scheme. A centralised model could support one or multiple competing centralised infrastructures – potentially allowing PSPs to select a central provider to clear transactions according to the defined rules of the SPP.
3. Progressive Migration: This involves a slow, longer-term migration approach and is set out in the Simplifying Access to Markets working groups' Data & Standards papers

The following sections cover considerations for each of the main options:

1. Distributed Model

A distributed model may be considered to have advantages in particular in terms of resilience and lower systemic risk. In a distributed solution, the overall systemic resilience of the SPP may even increase with the number of participants; this is the opposite in the case of a centralised system. The distributed model is described in more detail on p24. Essentially its key characteristic is that PSPs connect in a peer-to-peer manner in a similar arrangement to that used by the telecoms industry, which has developed to push the 'intelligence' for clearing away from the centre of the system to the edges.

A distributed approach presents the following advantages:

- **Scalability:** Given the potential number of PSPs requiring access to SPP (there are close to 2,000 PSPs in the UK, of which fewer than 40 have direct access to any of the current interbank systems PSOs, so the potential for new direct participants is very large even before considering any evolution in the size of the PSP market) a distributed approach would allow for scalability without compromising security, resilience or quality of service. It can also leverage the network effect of its structure; the addition of new participants increases its capacity without requiring an investment by any participant except for the one joining the network
- **Cost of Maintenance:** The cost of a decentralised system, in which there is little or no central intelligence providing the service, would be minimal. We envisage the central system only requiring the provision of the network and the maintenance of the governance body, which does not include platforms or technical operations. Nevertheless it would be expected that PSPs would need to upgrade their systems, being responsible for the connection of their core systems via a core gateway to all other participants on a bilateral, distributed basis
- **Single Point of Failure Elimination:** A decentralised system does not have a "head" therefore it is harder to attack and disrupt. This means it can be designed to be resilient to cyber and DDoS attacks and failures since the only possible failure are the failure of its participants. A participant failure would mean that the affected participant would be out of reach, but it would not necessarily impact the remainder of the participants who may be able to continue to transact without disturbance. It is, however accepted that overlay services, which may be developed, such as direct debit, may require participants to react within certain SLAs; failure to comply may still affect other participants in the system
- **Technology Efficiency and Competition:** A decentralised system places its intelligence at the edge of the network, such is the case of mobile telephony infrastructure, where the intelligence is built into the handset. As such, there will be a competitive market for the procurement of the core technology required by each participant PSP. In the pursuit and delivery of an efficient and competitive market, this solution will allow PSPs to replace a particular component of their technology for a new one with ease.

- **Flexibility in Settlement:** We also found that it is possible to develop hybrid systems, in which the ledger is centralised yet transactions are cleared peer-to-peer. A distributed model approach using central settlement could be used for the implementation of the SPP.

2. Centralised Model

A centralised model may be considered to be less radical than a fully distributed model. While it may not provide some of the advantages of a distributed model in terms of a reduction in central cost, it may possess benefits from the additional control and faster response time of transactions that may be achieved, at present, from a centralised clearing model. The centralised option is described in more detail on p25. In essence it is similar to today's system of PSOs and infrastructure providers, but with clear separation between parties. In this model the governance entity would either procure the centralised infrastructure, or allow competitive centralised infrasructures to operate within the rules framework.

A centralised approach presents the following advantages:

a. **Control:** Centralised and procured infrastructure may be more robust base for payments systems to be provided to market participants. The nature of certification and assurance that is possible with a single closed system makes the infrastructure more secure in terms of assurance of correct behaviour. In addition, functional enhancements can be assured to be well tested and released in a controlled manner.
b. **Speed and Throughput:** Current distributed ledger technology does not cater for the high throughput of extremely high volumes of domestic payments in clearing scenarios. While this technology may develop over time to cater for higher volumes, it currently cannot be assured to handle the volumes of domestic UK clearing. Providing a core infrastructure as the base with a high speed switch-based technology may continue to be a higher performing solution than distributed ledger in the medium term. In addition, adding participants to the network requires only the addition of a single "pipe" or connection to the core infrastructure rather than a connection to many distributed participants. The performance and throughput of a central infrastructure connection can be specified and monitored, while that of a wholly distributed network may be harder to achieve
c. **Common Connectivity:** A layered model would reduce the number of network and gateway connections required to connect to UK payments schemes to only one. While multiple overlay services may run over the infrastructure, the underlying connectivity will be simpler and cheaper than existing schemes, and also than aggregator services (as the underlying mechanisms and messaging formats will have been reworked using standards
d. **Overall Costs:** There may be economies of scale available through a centralised model approach, due to the scaling effect of providing only one core platform to which multiple parties connect. This may increase the buying power of smaller PSPs and offer the potential to reuse existing infrastructure, for example, that used by existing schemes today or other centralised clearing system products from elsewhere. A competing set of infrastructure providers (operating in a similar manner to that seen in Europe under

SEPA where several CSMs operate) may provide lower costs to higher volume PSPs who may be able to leverage their market position, although smaller PSPs may potentially be unable to leverage these economies of scale.

3. Counter-Factual Option (Migration-based Approach)

A model based on a slower migration may not achieve all the benefits of the main 2 options put forward by the SPP. Nevertheless, it may achieve a scenario in which direct (and possibly indirect) participants would be able to submit and receive payments more cheaply than today by means of using an international standards-based messaging format. Combined with approaches to build on aggregators in the market, use of international-based messaging standards could improve the ability of existing payments schemes to cater for new end user needs-based services and enhanced data requirements. A slower migration approach would have the possible advantage of having less impact on existing PSP and corporate user connectivity.

A slower migration-based approach presents the following advantages:

a. **Less Impact to Existing Participants:** Taking the approach of allowing the existing schemes to map to international formats and migrating existing services over several years would be a lower cost migration approach for existing PSPs and corporate direct access customers (including direct debit submitters). It would be expected that corporate users would be able to limit changes to the timeframe of gateway upgrades. New services could be built on new standards immediately (as CASS has been built on ISO20022, and Cheque Imaging is expected to be built on ISO20022 also). The full benefit of enhanced data capabilities would not be achieved however until the core infrastructure was upgraded to support it, and in addition a critical mass of participants had also upgraded.

Migration Approach

Regardless of the option selected for implementation, it will be important to consider carefully the migration approach from existing PSO scheme-based payments to those built on the new SPP. The success of the migration will be dependent on the economic viability of the approach. It will be important to ensure there is sufficient economic incentive to migrate from current schemes to the new SPP. A migration plan will be needed to manage the transition of customers and traffic from existing arrangements with an end-date set for current schemes, in particular with respect to their credit transfer functionality.

Impact: Success Metrics:

Success for the SPP will be demonstrated largely by the migration of customers and traffic for UK inter-bank payment systems to the new SPP. Measures for demonstrating success could include:

- Lower costs for participants for inter-bank payment systems (direct connection to SPP and membership of overlay services)
- Increased numbers of direct participants into UK payment systems

- Migration of existing PSO schemes into overlay services
- Increased numbers of overlay services providing new and innovative market solutions
- Implementations of new end-user required functionality (e.g. request to pay)
- Provision of enhanced data services on top of SPP, with overlay services created for business, corporate and government users

Next Steps:

Whilst there is a lot of detail covered in this document, it largely focuses on the development of a "distributed model" for the SPP. This has been due to the advanced nature of thought in this specific area and the direction of travel in terms of the recommendation to support a distributed model..

In order to advance our work further, the critical next steps are as follows:

1. Develop a robust cost/benefit analysis of the options put forward
2. Outline high level development plan, timelines, budgetary requirements etc.
3. Undertake formal consultation
4. Conduct design work, set out standards framework, define APIs and messaging standards to be employed
5. Based on moving forward with a recommended option, undertake an initial implementation (proof of concept) to validate the approach and demonstrate overlay services potential
6. Set up governance framework for the implementation, including establishment of PSOs, appropriate regulatory oversight
7. Depending on solution option – procure/develop centralised solution or set out framework for development to PSPs and vendors for distributed solution

Appendix

This appendix includes more detailed information on the concept and design of the new Simplified Payments Platform – focussing on the "Distributed Model".

Simplified Payments Platform (SPP): Detailed Information

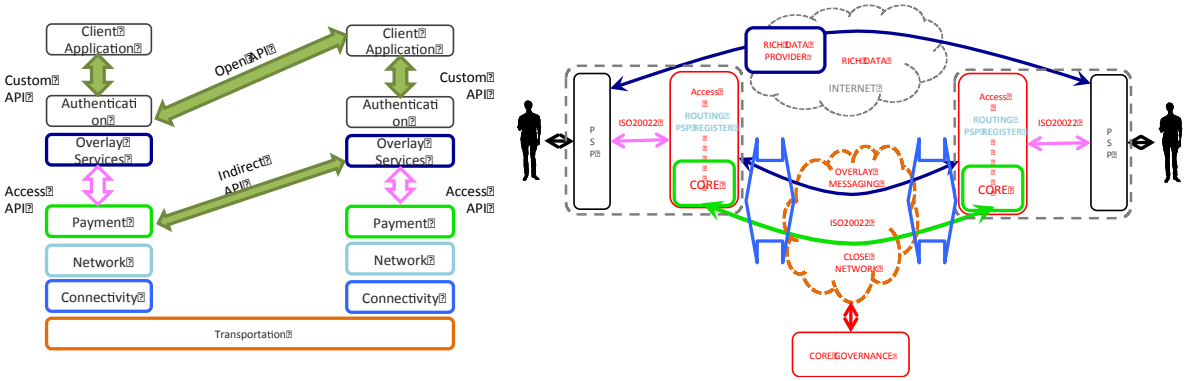
Key Design Features

The fundamental design features and principles on which that solution is based are:

- Single Push Rail
- Governance
- Layered Architecture Approach
- Common Messaging Standards
- Overlay Services
- Models for Implementation

The preferred and recommended option for its implementation is a distributed implementation method. Were another method be used, some of the most important principles required to ensure its long term viability, such as scalability and low maintenance cost, could not be respected.

This picture shows the formal layered model and the high level implementation building blocks based on a distributed model.



Colour coding identifies which element corresponds to which layer in the formal model. The single push rail is a clearing rail and does not include, or assumes, any specific form of settlement. It is therefore independent from settlement process.

Single Push Rail

The single push rail is a payment system that only performs one task. It is the common denominator of any payment. It simply pushes a payment instruction from A to B quickly, reliably and efficiently and it is not concerned with the context of the payments, instead allowing a reference to additional information. The single push rail would be concerned with the payment, which would be dealt with as an Overlay Service. It allows for 24/7 payments in real-time or near-real-time and for any value with a minimum of exceptions.

The agreement and design of the specifications which constitute the single push rail will be a collaborative effort.

Governance

There would be an independent body to ensure governance of the standards set for the single push rail, ensuring Overlay Services worked within the specification. The role of the governance body would be to own the standards and protocols used; certify technology providers that their technology works according to the standards; authorise PSPs to connect to and leave the system; and to maintain the master register of PSPs to allow routing.

Layered Architecture Approach

The layered architecture approach follows the principle of separating the tasks and roles that are independent from each other, yet each layer provides a service to the other. The layered architecture is exemplified in the single push rail design and the overlay service, as described above.

In a layered approach, the layers communicate via interfaces, which are designed in a standardised way; this design means that changing the content of a layer, does not affect the entire system, as far as the interface is respected. The layered approach has significant advantages for the maintenance of the entire system since it makes it modular, hence insulating improvements, or modification, of a layer from the others.

Common Messaging Standards

The messaging for the single push rail would be as lean as possible to enable it to pass as quickly as possible through the system. This underpins real-time payments. ISO20022 is the necessary standard which is already being adopted by systems and PSPs. However, ISO20022 affords messages a great deal of verbosity, which needs to be mapped correctly to work across the various APIs the messaging must transit through. Therefore, work would need to be done to define the leanest common messaging standard for the push rail. The leanest message incudes, however, all information required to identify payer and payee and to allow PSPs to perform their obligation of payment screening and the verification of matching of payee and beneficiary of the destination account. As noted above, additional contextual information would be provided by an overlay service.

Overlay Services

Overlay Services are the services that provide context to a payment. Examples of Overlay Services could be Direct Debits in which even before any payment is performed, there is the need to establish a mandate and then to send direct debit instructions prior to any payment being made; all those exchanges that result from the instruction of a payment are Overlay Services. Overlay Services use the single push payment as building blocks of what they offer to its users.

There are two types of Overlay Services:

- **Collaborative:** these are developed to provide an industry-wide level of service. They may include, but are not limited to, services that provide backward compatibility with existing services found today such as BACS' Direct Debit. Other desirable industry-wide collaborative Overlay Services could be: Request2Pay or validation of a payee. These Overlay Services are applications installed at the PSP's end, and most likely within the same platform that provide the Core. They can be presented as add-ons offering their own interfaces to the PSPs.
- **Competitive:** these services are developed by PSPs and made available as modules or platforms that can be adopted by those PSPs that require them, or even directly by final users in the case of Overlay Services provided by TPPs. They can be deployed, as in the previous case, within the same platform than the one for the Core.

For the payment system the layers identified are the following:

1. **PSP:** it refers to any authorised PSP that accesses the payments system. The model assumes all PSPs have direct connectivity to the system for clearing, while for each PSP, settlement can be direct or indirect but is currently outside of the scope of this description. PSPs not requiring direct connectivity for clearing, behave as an end-user that operates its own account or accounts held by a PSP connected directly.
2. **Access Module:** the access module holds the intelligence necessary to operate the system and is located at each PSP. It can be a device or provided as a service by a vendor. This access model performs many tasks, such as:
    a. Holding a local copy of the register of each PSP, Overlay Services and Routing Tables
    b. Includes the Core
    c. Intelligence to support compatibility with existing PSOs during transition towards the final model
3. **Core Module:** The Core is the module that includes the clearing intelligence. Depending on how the distributed ledger is designed (block chain or other) the Core will operate in a different way. In a distributed model, however the Core is the module that performs the actual payment and keeps a record of transactions, and a copy of the ledger.
4. **Routing registers:** these are distributed register that map PSPs and their service capabilities and their routing address so that PSPs can route payments. The register is a table, or set of tables, mapping PSPs and their IP addresses.
5. **Overlay Services:** Overlay Services can be implemented in many ways and may be completely private in their definition, implementation, setup and operation such as the case of an Overlay Services based on TPPs. However, the Overlay Services as depicted in the figure refers to those Overlay Services that are operated by the PSPs and installed in the Access Module as an application. Overlay Services use the Core Module payment service to provide a more complex service, for example Direct Debit, or bulk payments etc.

6. **Close Network:** the close network is a TCP/IP based network like the internet but it is not part of the internet. Its IP addresses are not recognised in the Internet and use a private DNS. Networks provided by multiple Telco's can form the close network and competing telecom providers that must comply with the technical standards and rules set by the Governance Body. Elements such as security, resilience and low latency are to be found in the standards that govern this layer.
7. **Connectivity to Close Network:** the access to the Close Network is the link between the PSP and the Close Network. Such access can be via an encrypted channel or VPN through the internet, can be a leased line or other. The key is the preservation of the security intended in the Close Network. The Access must also comply with the standards set by the Governance Body about Access.
8. **Access API:** this is the Application Programme Interface (API) to provide the single push payment as a service.
9. **Core Governance Body:** The Core Governance body is the owner of the standards that govern each layer and is responsible for their evolution and enforcement. It is also the body that certifies technology implemented according to each standard. The Governance Body also performs tasks such as maintaining the master register of PSPs allowed to connect to the Close Network, and also the routing tables uses in the communications. The Governance Body is not involved in everyday operations. Its involvement is limited to the certification and authorisations given to PSPs to connect or not.

Models for Implementation

There could be more than one way in which the single push rail is implemented; two main models have been proposed – distributed model, and a layered model.

Distributed Model

The key characteristic of this model is that of a distributed system, where PSPs connect peer-to-peer. This emulates the way in which the telecoms industry has developed to push the 'intelligence' away from the centre of the system to the edges.

In this system the specifications for the single push rail, while agreed collaboratively, can be implemented by anyone in a competitive way. This is similar to the way in which the internet networks operate now, there are many browser implementations, accessing across the internet many web applications and services, but remaining decoupled in implementation and scalable.

The 'intelligence' is now 'pushed to the edges', like it is with mobile phones in telephony. Thus there are a set of basic Overlay Services provided to PSPs, which would likely incorporate everything we have today (e.g. credit transfer, direct debit etc.) but would also allow for the evolution of new and as yet, unimagined payment services. One might consider these as value-adding 'apps' on the mobile phone which provides minimum basic services. In the new context Overlay Services are cheaper to build, sell and purchase in a competitive market. They promote innovation, competition and versatility.

Clearing is undertaken directly between PSPs across the network, rather than centrally through a single infrastructure. Risk is significantly reduced because there is no single point of failure. Should a single PSP fail the single push rail will still continue to operate.

Settlement will be managed separately, depending on the risk and needs of the overlay service. The solution will specify how the clearing instructions and settlement instruction will be verifiably coordinated and not result in a systemic risk of financial uncertainty between member PSPs and the Bank of England.

Centralised Model

A centralised model solution would be characteristically similar to the model of an existing PSO with a procured infrastructure provider. In this model the governance entity, which would in effect be a PSO, would procure an infrastructure on which to build the SPP push rail payment mechanism. Overlay services would be mapped on top of this new mechanism and provider, as in the distributed model.

Clearing would operate on top of the new SPP through the central infrastructure in a similar manner as today, with the exception that the new SPP would require only 1 set of connectivity infrastructure for connection to the central switch. Participants would receive clearing messages from the SPP or defined overlay schemes centrally. It would be possible to develop a new centralised infrastructure, or to build on top of existing infrastructure from existing schemes. It is also possible to conceive a centralised model which would be based on competing centralised infrastructure providers (in a similar manner to that seen in Europe under SEPA where several CSMs operate), as well as a single provider.

Under a centralised model, existing frameworks of supervision would continue – settlement arrangements would need to be defined and agreed with the Bank of England for the SPP, as well as for the overlay services.
Given the simpler nature of the underlying SPP as compared to the existing multiple infrastructures in the current schemes, it is expected that a centralised model would still be simpler, cheaper and more convenient connect to, than the several gateways that require connectivity today.

Basic Operational Processes

Multiple independent implementations and operators of the core technology are expected, and they will be interoperable due to their respecting the same standards. Payments will be performed peer-to-peer, which has the advantage of accelerating the speed at which a payment reaches its destination. However, it also removes stress from the system since no single active element in the system must cope with all the network's payment's traffic; the higher the number of participants, if assuming a constant number of payments, the lower the processing capacity required by any PSP.

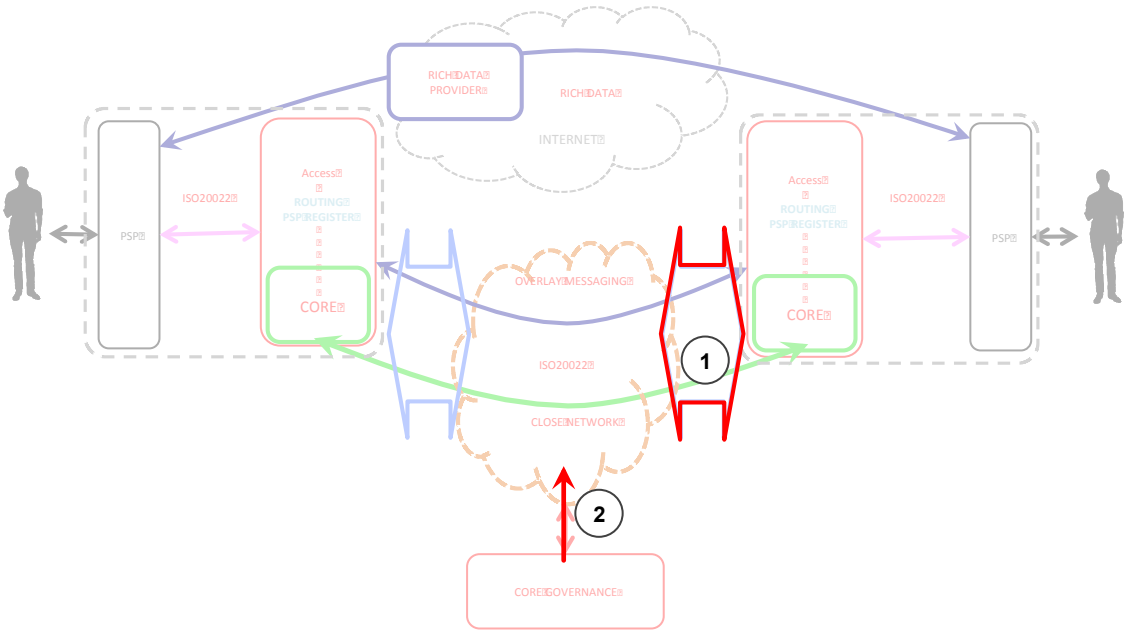
Payments messages are generated by PSPs using the SPP service provided by the Core. The Core is a particular implementation of the Core standards. The Standards are developed and agreed by the industry as a collaborative effort, yet the technology that complies with the standard is competitive. An example of this is mobile phones. All mobile phones comply with the same industry defined standards and for that reason, phones of different manufacturers can call each other and interoperate. However, they are developed competitively.

Adding a PSP to the System

The addition of a PSP to the system starts by the PSP installing the Core module that it has procured from a vendor, or that it has developed in-house and had certified by the Governance Body. The addition of a new PSP requires only two steps:

1. the setup of the connectivity to the network
2. the Governance Body communicates to all PSPs in the network that a new PSP exist by broadcasting its routing parameters.

From that moment the PSP is reachable and transactions can start. The process described does not include the necessary steps to perform settlement. It is assumed that in SPP all PSPs are direct for clearing while for settlement they may be direct or indirect. We have illustrated this below:



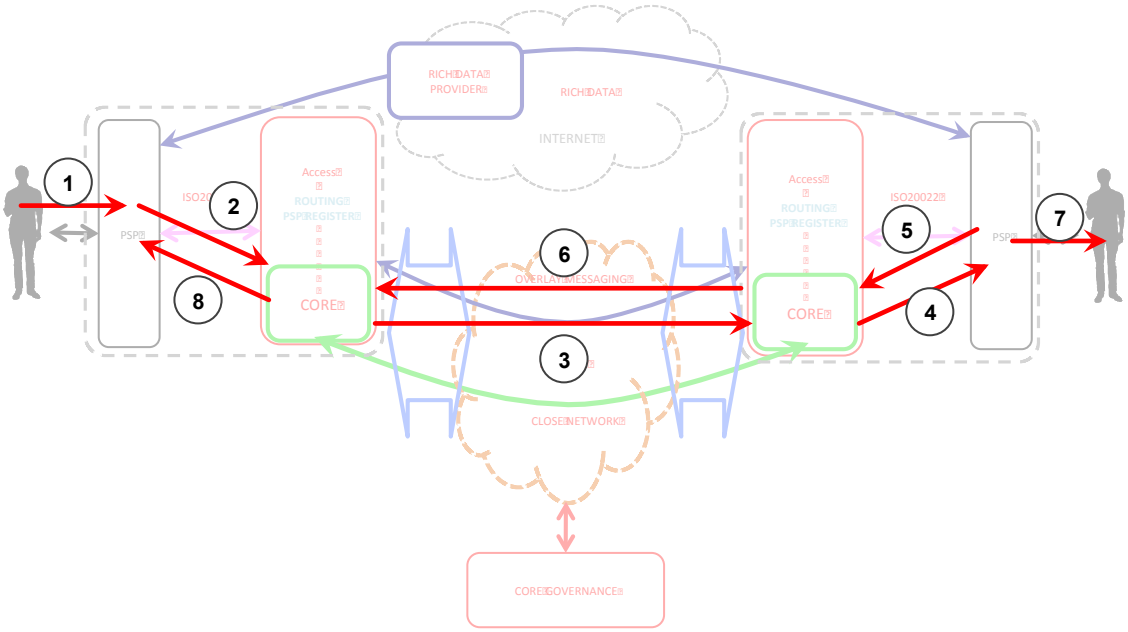
Payment Process – Example of a Bank Transfer

The performance of a transaction follow the process steps outlined below:

1. Client instruction issued
2. PSP calls payment service from Core
3. Payment:
    a. The payment occurs peer-to-peer.

   b. The Core accesses the local copy of the routing tables and extracts the IP address of the destination PSP and verifies its status
   c. The Core of the paying PSP sends the payment message to the core of the destination PSP
4. Core verifies the destination accounts exists
5. Receipt is confirmed by destination PSP
6. Payment confirmation:
   a. Upon receiving the confirmation both Core registers the transaction locally
   b. Depending on the technology chosen to implement the clearing mechanisms, the procedure may vary, but in general the Core's communicate their registering of the transaction to a distributed ledger shared by all participants. This ledger does not include payer and payee information but only transaction information which will be used for settlement
7. Optional: communication to payee
8. Confirmation of payment

In the example referred to, and illustrated below, the transaction completed successfully. Reason for failure could be the non-existence of the payee account or no-response of the account for any other reason.



Note on ANP: the fact that all PSPs have an up to date copy of the routing tables allows the introduction of a new account numbering or ID convention, or it could be free, so that new account IDs would be considered an alias of the account number. In this way, such aliases could also be stored locally and updated at any time via propagation through the network so that ANP can be performed. Individuals would use their aliases instead of the account number, which would be left as a technical information mainly relevant for routing.

Key Process Steps

There are three key processes so far determined, and these are outlined below. Ownership is yet to be fully determined.

1. Definition of the single Access API and legacy PSO messaging translation/mapping along with a single accreditation process for any PSP to join all existing schemes
2. Creation and publication of the Core standard and deployment of Core platforms at PSPs
3. The transition phase will include new PSPs using only the Core while previously directly connected PSPs will add the Core to their existing connectivity

The final stage is the deployment of collaborative Overlay Services and suppression of existing PSOs and their connect.

Impacts of the New Simplified Core Payments Platform

In this section, we have set out to identify the impacts on four protagonists in the process: End-Users; End-Consumer/Businesses; PSPs and PSOs.

End-Users

The introduction of the SPP enables the introduction of some of the features and services required by end-users to include their control of payments, such as request2pay and the verification of the payee. Beyond that, the SPP will enable the appearance of many new ways of paying adapted to specific user groups.

End-Consumer/Businesses

Consideration will need to be given to allow business end-users to have access to the SPP to submit transactions, in a similar manner as today with BACS Ditrect Submitters, where businesses submit using software provided by accredited software vendors. Business submissions could be enabled using a similar mechanism as today and employ Overlay Services to provide required management, governance and business rules (for example BACS Direct Debit).

Payment Service Providers (PSPs)

PSPs, especially new and indirect PSPs, will have the chance to become direct and find themselves on a level playing field with existing direct participants. This is a great opportunity for competition.

Payment System Operators (PSOs)

Existing PSOs would suffer the most change given they would become operators of the Overlay Services that complement the SPP to replicate existing payment services. By the same token, the existing PSOs have the opportunity to transform into Overlay Service providers able to create new forms of payment in competition with others.

A New Target Operating Model

In considering how the changes may affect the industry, it is important to consider a new target operating model. This may affect PSOs, PSPs, and/or the wider industry. We have outlined five key points for consideration here.

1. Creation of a Governance body in charge of developing the standards of operation is essential to its success
2. Introduction of the single access (based on ISO20022 messaging) and accreditation process for all schemes: "single counter" policy.
3. Introduction of a mapping capability in the gateway between ISO20022 and each of the messaging standards of the current schemes.

4. Introduction of industry wide Overlay Services: request2pay, verification of payee and rich data capabilities. ISO20022 will already ensure enhanced data to allow PSP to perform better AFC checks.
5. Introduction of the Core module and PSP register and connectivity to settlement mechanism (dependent on the RTGS review)

Key Risks and Issues

The introduction of a new payments system is always extremely sensitive since it involves abandoning a well-known reality for something new.

The key risks are on security, robustness of core applications, thoroughness of the standards, etc.
All those risks can be managed and mitigated if we applied best practices to each of the building blocks of the new system and its deployment is done sequentially; providing time to fine tune the system's implementation prior a full market adoption.

Transition State

There are various transition states that have been identified as we have formulated the proposed solution. These are:

1. Single access only coexists with direct and indirect access of existing PSPs
    a. Definition of the single Access API and legacy PSO messaging translation/mapping along with a single accreditation process for any PSP to join all existing schemes
2. Single access plus the SPP coexists with direct access of current direct participants
    a. Creation and publication of the Core standard and deployment of Core platforms at PSPs
    b. The transition phase will include new PSPs using only the Core while previously directly connected PSPs will add the Core to their existing connectivity
3. Final state definition by a "must comply by" date X
    a. The final stage is the deployment of collaborative Overlay Services and suppression of existing PSOs and their connectivity